The Use of a Personal Computer: Interface aesthetics in live visual performance as criticism of human-computer interaction

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School of Arts, Design and Architecture

Master's Thesis

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Masters of Arts thesis abstract

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Abstract

The Use of a Personal Computer is a series of live performances which examines visual performance, interface aesthetics and cybernetic criticism in media art. This Master's Thesis work consists of the performances, two of which are documented with video material included as links to the manuscript and the written thesis.

The written part of the thesis examines the processes behind the realisation of the project and the context within digital art of the artistic and design decisions made. Its main argument presents that interface aesthetics can be used as elements in media art to discuss mediation and other implications of human-computer interaction. By adopting theoretical frameworks the work presents that through foregrounding the often ”transparent” interfaces and media artefacts, an artist is able to assign new meanings to them beyond their sole function, creating new representations. The thesis addresses a proposition according to which criticism of a cybernetic system should be meta-reflective and cybernetic in its form, examining in which respects the live performance managed to address this proposal.

Ultimately the text describes the performance in conceptual terms and introduces the observations of this experimentation and in which terms the work participates in cybernetic criticism.

Keywords	interface aesthetics, media art, live visual art, VJing, visuals, digital art, interface art, post-digital, post-internet, visual culture, media culture, mediation, GUI, cybernetics, cybernetic art, cybernetic criticism

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Tiivistelmä

The Use of a Personal Computer on maisterintyönä tekemäni esityssarja, joka tutkii digitaalisuutta ja tietokoneen roolia esitystaiteessa. Tämä opinnäytetyö koostuu kahdesta osasta: pitämistäni esityksistä sekä kirjallisesta osuudesta. Kahdesta esityksestä on näyttönä videotallenteet.

Tämä teksti selittää teoksen taustaa ja sen tutkimia käsitteitä sekä avaa taiteellisia valintojani. Teos pohjaa käyttöliittymien visuaalisiin ja toiminnollisiin elementteihin, manipuloiden ymmärrystä näistä representaatioista.

Pääväitteeni on, että tietokoneen käyttöliittymän estetiikkaa tulisi hyödyntää mediataiteessa sikäli, kun keskustelu koskee ihmisen ja tietokoneen välistä vuorovaikutusta (HCI) ja sen seuraamuksia. Perustelen väitettäni pitkälti ”etualalle asettamisella”, minkä mukaan muutoin huomaamatta jäävät käyttöliittymän ominaisuudet saavat uusia merkityksiä luovien toteutusten avulla. Sekä taiteellinen työni että tämä teksti pohjautuu pitkälti Søren Poldin ajatukseen, jonka mukaan kyberneettisen kritiikin tulee olla itsessään kyberneettistä ja heijastaa kohdetta itseään, ja olla jopa muodoltaan yhtenevää kritiikin kohteen kanssa. Tekstissä käsittelen, miten työni vastaa tähän ehdotukseen ja millä keinoilla live-esitykseni onnistuu HCI:n kritiikissä.

Avainsanat	käyttöliittymätaide, digitaalinen estetiikka, mediataide, live-esiintyminen, VJ, visuaalit, digitaide, post-digitaalinen, post-internet, visuaalinen kulttuuri, mediakulttuuri, mediaatio, GUI, kybernetiikka, kyberneettinen taide, kyberneettinen kritiikki, taidekritiikki

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1. Introduction

> Information processing technology influences our notions about creativity, perception and the limits of art. . . . It . . . probably is not the province of computers and other telecommunication devices to produce works of art as we know it; but they will, in fact, be instrumental in redefining the entire area of esthetic awareness. (Burnham, 1970a, p. 11).

The early exhibitions of technological art had a rather technical approach (Burnham, 1970a, p. 11). Engineering as a field was a curiosity for artists who were not technically able to participate in the advent of the new tools (Dartmouth, 2013). Pioneering efforts between the two fields were able to initiate early collaborations, yet it required several accounts and exhibitions to proceed from pondering the digital devices as mechanical objects to an observation of their nature. This thesis therefore begins with an analysis of certain events when *cybernetic art* became conceptual and not only demonstrative of technological functionalities. I focus on *Software*, an exhibition curated by Jack Burnham, whose exquisite vision the quote above depicts. This was in the 1970's, and since then computers have certainly rearranged aspects of all aesthetic life. By discussing the early movements, I prepare a foundation for the thesis to later discuss the conceptual attributes of interface aesthetics in contemporary media art.

Many artists, collectives and even organisations in the field of new media have taken account of the term 'post-internet' or 'post-digital' – even the contemporary art museum Kiasma with their feature exhibition of ARS17 strictly focused on these terms (Haapala, Aarnio, & Vanhala, 2017). Christiane Paul (2017) in the exhibition book *ARS17: Hello World!* offers a comprehensive explanation:

> The condition described by the 'post-' label is a new, important one: a post-medium condition in which media in their originally defined format (e.g. video as a linear electronic image) cease to exist and new forms of materiality emerge. At the core of the post-digital cultural and artistic practice in the early 21st century seems to lie a twofold operation: first, the confluence and convergence of digital technologies in various materialities; and second, the ways in which this merger has changed our relationship with these materialities and our representation as subjects.

Numerous contemporary artists working with digital material (and within digital materialities)

address humanistic relationship to technology. As new forms of materiality emerge, the methods of post-digital artists tend to include digital media and the multiplicity of its contexts either technically or thematically as material for their work. My thesis work aims to address both; a digital artwork which aims to discuss the digital condition. In order to critically discuss these subjects of the digital age, I have taken an approach which Søren Pold (2011) presents in his text *Interface perception: the cybernetic mentality and its critics*. Pold suggests that in order to criticise a control and feedback system (such as interaction between humans and computers), it must be invaded and infiltrated. According to him, the critique ought to be performed in some respects *as* the system, or at least by using its inherent form. In my experimentation and research, I have adopted the theoretical model of Pold by creating an artistic representation of the media representations that I consider problematic.

The thesis could approach the criticality of the performance in terms of critical design, but to me the proposition of Pold with its inclusiveness and particular emphasis on cybernetics is much more relevant and justified in the discussion of my work as technological or cybernetic critical artwork.

In this thesis, I examine by which methods of visual media art such representations can be made. To me, the means have mostly been re- and de-contextualising interface aesthetics and media artefacts. I have come to the conclusion that to delve into the cybernetics of human-computer interaction (HCI), the work had to be based within the user interface (a computer operating system) itself; and also as a presentation of the physical instance of this interaction. This consideration was established as an artistic practice of a live performance using a computer, a performance series titled *The Use of a Personal Computer.*

I draw upon works which I consider as successful examples of both cybernetic art and live computer performance. The discussion of cybernetic artworks includes conceptual artists such as Amalia Ulman and Constant Dullaart while live computer performance is approached through the movement of live coding and Holly Herndon's view of laptop as an instrument. Some parts of the thesis also draw upon and reflect on visual jockeying (VJing), since some contexts and occasions presented my performance as a practice of VJing. I also refer to artists whose work addresses the intimacy of a computer and artists who utilise interface aesthetics as medium or material for their work. All the related works concretisise what Paul (ibid.) describes as intrinsic for post-digital art: cherishing digital materiality either technically or thematically.

Interface aesthetics and artefacts of digital media offer excellent material for artists working

within the field of new media art. Not only by visual adaptation and manipulation, but also through experimental use of ”standard” interfaces, an artist can access the cybernetics of human-computer interaction, allowing for new representations. The proposal of Pold as for entering a cybernetic system meta-reflectively in aims of well-executed criticism seems to apply both technically and thematically to my work. However, the efforts of *The Use of a Personal Computer* considered technicalities excessively and my work should have involved conceptual development equivalently.

Finally, I consider whether the procedures of my artwork are an effective way to enter the cybernetics of HCI – in particular its visual software as means for representation of the subject. I conclude my efforts of software development as unnecessary towards my conceptual aims considering the artwork, albeit the labour successfully produced analytical ideas about *software* per se.

2. Background

In this chapter I will examine three early events and organisations of technological art and discuss them mainly through the writing of Edward A. Shanken. His academic appointments have been in arts and media, with publications focusing on art and software, new media and contemporary art and cybernetics and art. His writing provides a useful framework for this introductory chapter of the thesis through analysis of early technological art considering software and its relation to cybernetics.

2.1 Pioneers of technological art

Shanken (2001, p. 433) discusses thoroughly the advent of technological art, examining late 1960's to early 1970's movements, as artists followed McLuhan's almost popular cultural pronouncements from the shift of machine-age towards information-age. He refers to Experiments in Art and Technology (E.A.T.), an organization in New York that sought to bring together artists and engineers, and its origins: ”E.A.T. had emerged out of the enthusiasm generated by *nine evenings: theatre and engineering*, a festival of technologically enhanced performances”, presenting fundamental and perhaps first efforts of technological art (performances). Dan Rockmore quotes Billy Klüver, the founder of E.A.T. at *the Winter 2013 Donoho Colloquium* to explain the aspirations of E.A.T.:

> I develop the idea that one to one collaboration between an artist and an engineer or scientist could satisfy the artist's desire to work with the new technology and produce modes of art that could not be addressed any other way. And the collaboration could also work both ways. Artist's projects could stimulate the engineer in new ways of looking at technology and influence technological development for the future (Dartmouth, 2013).

E.A.T. was highly divided in terms of production since arts and engineering were considered as separate fields, but Klüver's emphasis on interdisciplinarity – or even his initial aspiration of combining arts and technology – was relevant for the birth of technological art. However, Shanken (2001, p.433) states that ”few of the celebrated artist-engineer collaborations of this period focused on the artistic use of information technologies, such as computers and telecommunications.”

He moves on to introduce *Cybernetic Serendipity*, an exhibition in 1968 at the Institute of Contemporary Art in London. Shanken describes that the focus of this exhibition remained on ”the materiality of technological apparatuses and their products, such as robotic devices and computer graphics”. The artworks in *Cybernetic Serendipity* are indeed of mechanical, generative or strictly electronic qualities. They represent hardware-oriented installation works (Compart, n.d.; Monoskop, n.d.) which do not exclusively include digitally calculated processes (as in “computational art”), and certainly not works that consider the humanities of technology and conceptual cybernetics as such. Burnham (1970a, p. 11) describes that ”*Cybernetic Serendipity* contained much basic information on the historical development of digital computers”, with scientific experiments and artistic works demonstrating the principle of feedback in machines. Burnham does not recognise that the exhibition addressed the concept of technology and its effects but rather as a record of how computers and “various cybernetic devices” had been used in creative ways. The focus in *Cybernetic Serendipity* therefore seems fairly technical, exhibiting equipment and alternative ways to use them.

While the aforementioned pioneering efforts are interesting in terms of production of early technological artworks and were able to address and facilitate knowledge on computer mechanics and their cybernetics, they lack in discussion and presentation of the thematic which is relevant for this thesis and my artwork. They never in their presentation addressed the underlying technology behind (digital) machinery: software.

> Paradoxically, while social scientists, philosophers, cultural critics, and media and new media theorists seem by now to cover all aspects of IT revolution ... the underlying engine which drives most of these subjects—software—has received comparatively little attention (Manovich, 2013, p. 8).

2.2 Software – an exhibition

Following the trend of cybernetics and exploration of art and technology, the 1970 exhibition *Software* at the Jewish Museum in New York was a major event in the history of computer and interface-based art. *Software* ”was the first major U.S. art-and-technology exhibition that attempted to utilize computers in a museum context” (Shanken, 2002, p. 433), introducing computational art to the traditional ”art audience”. The curator of the exhibition, Jack Burnham (1970a, p. 10) describes *Software* as follows:

> *Software* is not specifically a demonstration of engineering know-how, nor for that matter an art exhibition. Rather in a limited sense it demonstrates the effects of contemporary control and communication techniques in the hands of artists. Most importantly it provides the means by which the public can personally respond to programmatic situations structured by artists.

Like the subtitle of the exhibition presents, *Software* explored the ”new meaning for art” of information technology. In other words, it examined the position of technology within art context, while questioning the repercussions of technology for society by means of art. Burnham (1970a, p. 14) elaborates: ”Software makes none of the usual qualitative distinctions between the artistic and technical subcultures. At a time when esthetic insight must become a part of technological decision-making, does such a division still make sense?” The fact that he uses the word *must* shows he is cultured and far-sighted. Considering these initiatives are now almost fifty years old and reflecting on the current movements in art and most especially digital art, the curator of *Software* Jack Burnham, as Shanken (2002, p. 433) writes, truly had a ”conceptually sophisticated vision”.

Widely examining the intersection between ”art-and-technology” and conceptual art, Shanken (2002, p. 436) finds that the traditional circles of conceptual art considered art-and-technology as ”gaudy, expressionistic and commercial excesses, that were extraneous and antithetical to the aesthetic investigation of superstructural ideas and questions of semiosis that defined key agendas of conceptual art”. In this conventional view, technological artworks were supposedly

overly expressive in their aesthetics to connect with the intentions of conceptual art. Not admitting to this conflict, Burnham (1970a, p. 10) considered that “the movement away from art objects” had already happened; hence most of *Software* became ”aniconic” – presenting its images as ”secondary or instructional” in contrast to its information, which often took the form of printed materials. In art that is ”transactional” which both movements represent, he finds that ”underlying structures of communication or energy exchange” are similar: both involve a notional perception towards meaning-making. Software, in comparison to *hardware,* deals with processing of information (be it digital, philosophical or empirical) and does not per se serve as a material representation. Similarly conceptual art presents its subjects in form of ideas in preference to the art object or its appearance. Considering the contradiction between conceptual and technological art from this perspective supports Burnham's proposition, which in my view proves highly valid as to the cybernetics of information and of cybernetic artworks.

Shanken identifies Burnham's conceptualistic protagonism, discussing his efforts towards making art-and-technology conceived as conceptual art as follows:

> … Burnham, being much more interested in and knowledgeable about art-and-technology, also recognized that its more theoretically sophisticated aspects … were closely related to central features of conceptual art. (Shanken, 2002, p. 437)

He also presents a few examples: ”concern with process and systems, the relationship between technological and aesthetic structures of knowledge, and an interactive, two-way exchange of information”. This positioning sets technological art extremely well to the area of conceptual art and particularly addresses it in ways which accurately correlate with the notion that I have of *cybernetic art*. Shanken (2002, p. 438) implies a similar understanding, stating that modern communication technologies “have provided tools that enable artists to *interrogate the conventional materiality and semiotic complexity of art objects* in ways that were not available 30 years ago” which implies a similar understanding. Due to the reformatting of information as strictly textual and its consumption as a digital casualty, it has become almost inherent for contemporary artists to produce digital artworks which have great conceptual value and utilise means of what is conventionally understood to belong to the sphere of conceptual art.

I would argue that *Software* worked as a fundamental exhibition in the sphere of cybernetic art due to its efforts in shifting the understanding of technology from *a device* to *an interaction*. It

was successful in redefining ideas about technology within the art world by demonstrating cybernetic artworks with focus on software rather than hardware, expanding the aesthetic understanding of technological art. In other words this could be seen as a shift from *observing systems* (first-order cybernetics) to the *observation of observing systems* (second-order cybernetics) (Abramovitz & Von Foerster, 1995) and (Dreher, 2016) where the technological object itself is no more peculiar as such and the focus of interest can proceed onto interaction. As for the works of *Software*, this is best exemplified in the interactive exhibition catalogue and one of the artworks, *Labyrinth* by Ned Woodman and Theodor H. Nelson. It was the ”first public exhibition of hypertext” (Shanken, 2002, p. 433) or as the (printed) exhibition catalogue states: ”first public demonstration of a hypertext system” (Burnham, 1970a, p. 18).

2.3 Reflections on Software

According to the analysis of Shanken (2012), *Software* also presented art as information processing, or art as ”software”, questioning the ontology of art objects. He explores (2002, p. 434) the artist statement of Les Levine, presenting that it ”emphasized his belief that the proliferation of mass media was changing knowledge into a second-hand mental experience of simulations and representations—i.e., Software”, as opposed to ”actual objects, places, and events—i.e., hardware”. In these terms art would be in fact ”software” due to the means of experiencing it. These cybernetics are best exemplified in an artwork which was exhibited at *Software* by Les Levine, *Systems Burn-Off X Residual Software.* The work consisted of 31,000 prints of photographs that documented another exhibition, "Earth Works" in Ithaca, New York a year earlier. Laid on the floor of the gallery, the work took a conceptual approach to present *information about art* as art. For Levine (Burnham, 1970a, pp. 60–61), these photographs represented the residue of the first-hand experience (of viewing art) and presented the whole mediative process as inherent of software. Shanken (2014, p. 17) describes this artwork:

> It functioned as a meta-critique of the systematic process by which art objects (hardware) become transformed by the media into information about art objects (Software). Whereas he stated that most art “ends up as information about art,” “Systems Burn-Off” was art as information about information about art, adding a level of complexity and reflexivity onto that cycle of transformations in media culture.

This line of thought can easily be linked to current social media culture in which experiences are distributed as information, but I am more interested in the process which considers

mediation. *Systems Burn-off X Residual Software* considers cybernetics in a vital manner, with a similar argument to that of my work: it discusses the mediation process in which an art object is handled solely as information, presenting this act in form of production of further information. The ”residual software” in Levines work (the photographs *as* information) serve as a critical structure in form of meta-mediation, manipulating the intended control and communication systems of the ”original art objects” and their meanings. The original artwork is mediated and disregarded, leaving behind only a residue of its original information. Moreover, the process of hardware becoming software manufactures as a new form, which mostly consists of information *about* the original, in other words a simulation.

Considering these notions in the modern media culture of excessive mediation, not only *art objects* but rather *all objects* – including humans – end up as (digital) information, as software. As stated in the quote in the beginning of this chapter by Burnham (1970a), information processing technologies have redefined ”the entire area of esthetic awareness”. The equivalence of an image to an object, of a representation to the corporeal is valid in much of the media formats and digital applications of today, for example in how messaging platforms successfully substitute speech. Numerous media theorists have covered the issues in ”becoming software”, as Colebrook (2014, p. 18) compactly presents:

> … it has been noted that there is an anxiety regarding mere images: the society of the spectacle (Debord 1973), a world of simulation (Baudrillard 1994), a world of passive consumption (Adorno 2001) or mere exhibition without aura (Benjamin 2008), a world of hyper attention rather than deep attention (Hayles 2007) …

Concluding this chapter, I find the early efforts of *Software* considering technological art, with its approach towards conceptual art, as a relevant example considering *The Use of a Personal Computer.* As I have elaborated, it highlighted the cybernetics of information processing systems, presenting it in an unforeseen manner as compared to the other technological art exhibitions of the time. *Software* presented key artworks such as *Systems Burn-Off X Residual Software* by Les Levine and *Labyrinth* by Woodman and Nelson, both of which pioneered in terms of cybernetic art; *Systems Burn-Off* thematically in terms of bodiless information and *Labyrinth* in a more technical manner considering cybernetics and interaction. The aspirations of the 1970's exhibition *Software* can be considered timeless in context of new media art. Shanken (2012) makes a note on *The Aesthetics of Intelligent Systems,* a 1970 essay by the curator of the exhibition, Jack Burnham: ”it is difficult to imagine a more concise and

prophetic manifesto for contemporary new media art than this statement, written more than four decades ago". In the essay Burnham proposes that:

> The computer's most profound aesthetic implication is that we are being forced to dismiss the classical view of art and reality which insists that man stand outside of reality in order to observe it, and, in art, requires the presence of the picture frame and the sculpture pedestal. The notion that art can be separated from its everyday environment is a cultural fixation [in other words, a mythic structure] … It may be that the computer will negate the need for such an illusion by fusing both observer and observed, "inside" and "outside" (Burnham, 1970b in Shanken, ibid.)

3. Related works

While a plurality of technological artworks – or even more precisely computer art – could be discussed here effectively, I have chosen to focus on a contemporary selection of practitioners and movements. These examples do not include the many, historically important efforts of computer art such as software cracking, interface hacking, demoscene or even systems art, all of which would be effective in exemplifying the area in which my work is as such positioned. Such genres of cybernetic art however are not of my interests, and I find it more relevant to consider works which as such attend the 'post-digital' or even 'post-internet' movements. I find their consideration of digital materiality and cybernetic approach more intriguing, and these works allow for a more contemporary reflection of the position of my artwork within these trends.

3.1 Cybernetic art

The term *cybernetic criticism* is explored at length in the next chapter but is used here to mainly describe works which utilise a certain medium in order to discuss the medium itself, or its relations. Such works, in my analysis, are based on being embedded within the system in order to utilise its in-built contexts and meanings and are often self-referential.

Amalia Ulman's *Excellences & Perfections* (2014) is a great example of a meta-critical

cybernetic artwork and perhaps the first of this type of artworks that gained widespread recognition (this piece was covered by BBC, Elle and Telegraph amongst others). The work takes on fictional narratives on social media by creating an ultimate fictional narrative. This approach is meta-critical in my view due to the fact that it works from within the system (the social network of Instagram) and utilises its cultural contexts and meanings in a native and fluid manner. Ulman presents in a panel discussion by MAMA (ThisisMAMA, 2015) that her work was ”role-playing for four months in my own account, in an attempt to 'self-destroy' in a way my own self-branding, which I had been unconsciously interpreting for a while as a female artist”. Briefly explained, she role-played different types of media users posting content that was stereotypical to these roles in her interpretation. She gained a lot of followers who were fond of her (faked) personality, thus being able to communicate with a well targeted and ideal audience.

The work carries similarities to my performance in analysis of digital imagery and utilisation of interfaces. However, where my work considers mostly the graphical user interface and human-computer interaction as a process, Ulman rather attends the ”cultural interface” (Manovich, 2001, pp. 69–70). Her work disregards media and/or mediation as the subject but rather discusses their semiotics – in particular those of a digital character, of image-based persona.

To me, the most important feature of the work is in the fact that it comes in an embedded (or cybernetic) format. It works as cybernetic criticism in terms of Pold (that of my research question presented later) and brilliantly enters the system that it seeks to criticise. It operates within the same domain and uses the same language as its subjects, gaining validation from her unaware audience. When asked in an interview how she would have liked the viewers to feel of the work, she stated: "uneasy with the world as they know it … I think that's my favorite feeling”. (Langmuir, 2016).

Screenshot of Amalia Ulman's *Excellences and Perfections* on Instagram. (Ulman, 2014)

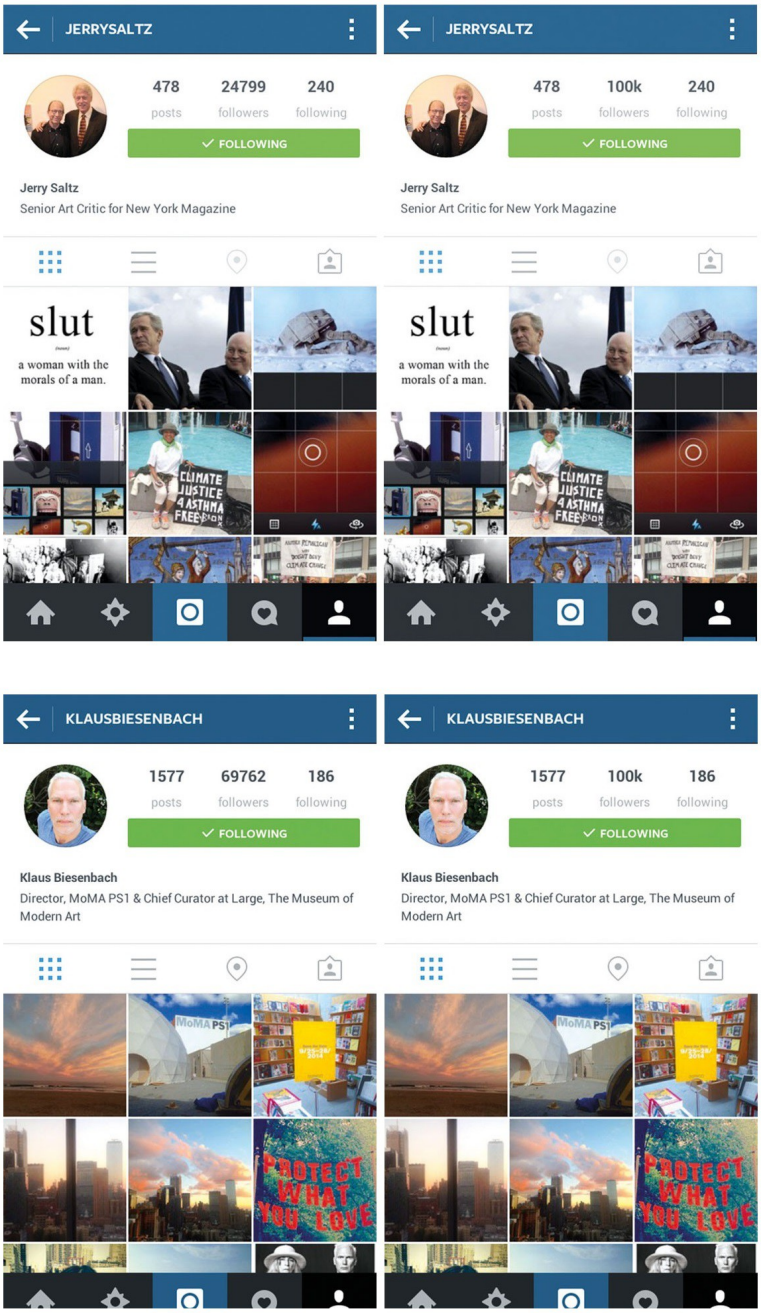
Ulman later exposed that these posts, actions and presentation of lifestyles was all a hoax and an art performance. Yet during the performance another artist also took action, working also in the field of cybernetic criticism in his own way:

> Five months had passed and she'd [Ulman] acquired some 90,000 followers, though many, it turned out, were fake accounts bought by the artist Constant Dullaart as part of a project meant to highlight the art world's "superficial attention culture." (Langmuir, 2016)

The work of Constant Dullaart ”seeks to expose the technological structures that inform modern visual culture” (Comstock, 2014), and in *High Retention, Slow Delivery* (this example of buying fake followers for art world individuals and organisations) he aptly intervenes in the technocultural practice of *following* and the social value that is created by a certain number of followers. Jones (2015) writes that Dullaart ”uses the internet to expose the internet”, which is accurate. Many of Dullaart's works are interventionist and exploiting the affordances of the Internet is a medium for Dullaart's art, such as buying followers to social media (websites as such) from websites that allow to do so. This, in my regard, is a great example of cybernetic criticism within digital environments; using the medium itself to perform an action aimed at

itself. Dullaart writes about *High Retention, Slow Delivery* in DIS Magazine as follows:

> A reset of social capital, socialism of the social is possible. … Artists, galleries, curators, critics, magazines and institutions using Instagram as a medium for their practice have been all been made equal. All have been assigned artificial followers to achieve the exact same number of followers on each account. No more difference in followers or social capital. (Dullaart, n.d.)



Compilation of screenshots of Constant Dullaart's *High Retention, Slow Delivery* ("KUNSTFORUM international," n.d.)

Similarly to Ulman, Dullaart also intervenes in cybernetics of much larger semiotic contexts than that of my work which focuses only on the personal features of human-computer interaction. However both of these examples show an interest towards exploiting the usual interface or its patterns. While these artists aim to hack the social constructions caused by technological applications, my initiatives take a step backwards and attempt to pinpoint the existence of these applications in general – perhaps even with too large of a scope.
Ulman shows a great example in ways of targeting her core (digital) audience in the cybernetic (digital) systems that are the subject of her critique; using Instagram ordinarily but alternating her content to fit the roles played out – the desired audience would follow organically. For Dullaart the method is very direct and easy to implement to reach the target audience. My case is principally different due to the fact it is a live performance with live audience in a much more traditional sense. For me the nature of the audience was never a primary concern. I felt that the use of computers is relatable to most people in a modern society, therefore the subjects of my work (and its format) would be easy to grasp.

3.2 Live computer performance

I wanted to challenge the notion of computer as an instrument: in its professional aspect as a tool for VJing, or any other type of live performance mediated by a computer on that matter. It often seems to be considered as a bane when errors are shown during a live performance; consider a VJ encountering a blue screen – their pure, clean output is interrupted by faults in software. Neither does it have to be a complete crash of the computer either: a non-fullscreen, windowed view to the software is enough to be considered a flaw; similarly to when in public spaces displays show code or a boot screen of an operating system. It can be safely presumed that in live performance this is due to aiming for high quality presentation of their work. The focus is surely on the output rather than the input – would the audience, after all, care about the underlying software anyway?
The ”live coding” movement on the other hand encourages transparency. A manifesto by a live coding organisation Toplap states that ”obscurantism is dangerous. Show us your screens” (“ManifestoDraft - Toplap,” n.d.). This statement is further explored in a McCallum and Smith documentary *Show Us Your Screens*, in which Dr Dan Stowell (a live coder and researcher of technological music) elaborates on the ideology of live coding:

> Showing your screen to the audience, they are not gonna understand it – certainly not all of it, but you can show the process evolving and people will get a bit of a feel for it. And they can see when there's errors or they can see when there's ideas that you're developing and coming back to. (McCallum & Smith, 2011)

The transparency to the real view of the actual software used in the performance allows the audience to be able to understand the process behind the output. In my work the unpolished and raw view to a computer screen is essential (even if the view is manipulated). As my performance became technically more advanced, moving further from the direct and flat view to my screen, I noticed that a certain *aura* disappeared. The notions of *aura* and *liveness* are examined at length in Chapter Five, yet has to be mentioned briefly here that a direct manifestation of presence is important for performance art – even digital. In a clear expression of *action* lies the ability for the audience to follow the process of my work. This creates the instance *live* in a more exquisite manner than if I would be mixing pre-recorded video files (as is the case with VJing), or solely using a pre-prepared software to go through various stages of the performance.

Parkinson and Bell (2015) juxtapose live coding with structurally ”predetermined” and ”premixed” concerts of Deadmau5 (a producer and a ”dance music superstar” as entitled by Parkinson and Bell). Their analysis is fairly applicable to my aspirations too, particularly when they highlight that live coding always involves improvisation and that it potentially allows for demonstration of instrumental virtuosity, which in my view is a strength in live performance. Whereas pre-designed visual performance would consist of prepared stock of material, I tend to highly appreciate the construction of imagery in real time and seeing the creative process (of both the human and the computer) happening. To me this is what constitutes a truly live digital art performance and makes it interesting to follow.

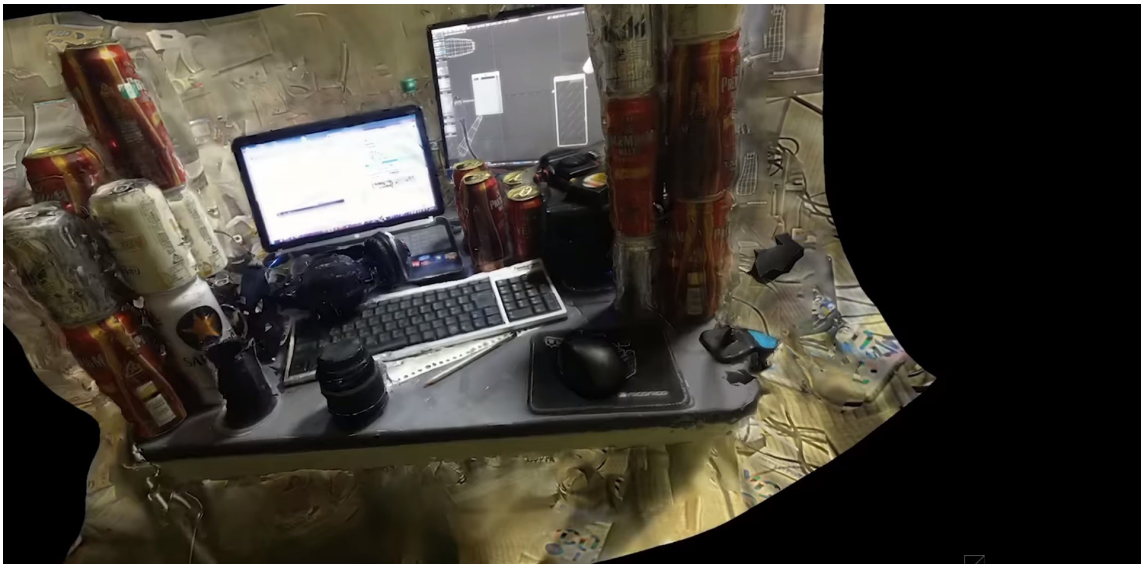
Still from *Show Us Your Screens* (McCallum & Smith, 2011)

Parkinson and Bell (ibid.) argue that ”the showing of screens potentially allows for the demonstrations of instrumental virtuosity”. Where Deadmau5 ”trades off spontaneity for reliability” in efforts of well-designed and perfectly executed performance, “he diminishes the possibility to demonstrate his own personal virtuosity” considering the use of his instrument, which strictly considered is ultimately a single computer. Parkinson and Bell, however, do take into account an important aspect of creativity considering composition and production, asking: ”at precisely what historical point did we expect our composers to be adept performers of their music anyway?”

The setting is similar in visual work, therefore presenting an issue in what constitutes a *live visual performance* and what exactly is exhibited. It often seems that visualists who primarily work with videos tend to use live performances as showcases for their (rendered) works – and that rarely the live performance in itself involves any creative work, other than assemblage in efforts of 'live collage'. The virtuosity in such cases is therefore seen in the quality of the rendered videos and in the eventual form of the collage, rather than in the actual live performance as an artist. Hence the focus on output rather than the input in live situations – the true instrument is not in fact the laptop but rather a specific software that is used to construct the material for the live presentation.

3.3 Intimacy of computers

In an interview for *Dazed Digital*, Holly Herndon describes her music: ”*Chorus* was inspired by the extreme intimacy that I have with my laptop” (Nesbitt, 2014). Such inspiration reflects in the works of Herndon even more generally and not only *Chorus*, since her approach seems to feature a post-internet aesthetic. The *use* of a computer and the emphasis of the media itself seems in fact to be a valid trademark for much art labelled as post-internet or post-digital. For the music video of Herndon's song *Chorus*, the director Akihiko Taniguchi scanned intimate environments of computer use: ”taken from the desktops of Ahkiko's [sic] acquaintance's workspaces and home computers, they gve [sic] an intimate, 3D exploration of what is, kind of, the surface of the internet” (Nesbitt, 2014). These views reveal something that could be considered as private information (especially within our computer-mediated society), which delivers rather bizarre a feeling but results in aesthetically and conceptually strong work.
In another interview Herndon states that ”laptop is potentially the most intimate instrument, as it mediates my personal life as well as being my instrument” (Stroot, 2015). These intimacies are exactly what *The Use of a Personal Computer* aims to exhibit, utilising similar approaches considering the PC as a personal tool, but also as a personal space. The fact that I am using and showing my own computer, its environment, files and *most visited websites* in a public screening creates an interesting tension between personal and public. It is my belief that this view, a glimpse to someone else's computing system and to their desktop is similar to the feeling of visiting an apartment of someone you do not know. The tension between what should be private and what is accessible is curious for it breaches the usual social codes of intimacy.



Still from a Holly Herndon music video *Chorus* (Taniguchi, 2014)

The intimacy is also a curiosity for Herndon's live visualist, Mat Dryhurst, although at times from a reversed stance. He brings voyeuristic elements to a concert by for example showing in his visuals the Facebook page of the event in question. ”For each show, I research who has advertized they are coming to the show through social networks, and present that back to the audience in different ways” (Stroot, ibid.). This correlation and also peculiarity of physical/virtual presence is interesting to me too. The process of 'online stalking' members of the audience in front of them is humoristic, as opposed to when being done privately. Dryhurst explains that ”there is also a clear narrative of surveillance and sousveillance in Holly’s music, and so it makes sense to extend that to the live shows.” (Stroot, ibid). In *The Use of a Personal Computer,* however, the stalking is in a sense intended to work the other way around; the audience is in a position of watching me interact with my feed, my profiles and my files. The personal intimacy is exposed purposely, whereas Dryhurst utilises strangers' data without their consent.

Screenshot of a YouTube video of visual performance of Mat Dryhurst
(Allroy For Prez..., 2015)

Has to be pointed out here that the setting of *audience as a subject* in these sort of performances is still a relatively niche area but one of the greatest potentialities of live digital art. Inasmuch as tailored advertising is already a reality, art should follow. Dryhurst mentions that it is ”a good space to experiment with ... this information is publicly available as a raw material for art work”. (Stroot, ibid). I have already (in performances after *The Use of a*

Personal Computer) taken initiatives towards this nature of practice, downloading profile pictures of the members of the audience who have indicated on Facebook to attend the event and utilised their images in the textures of my visuals. Dryhurst makes an important point that this ”is received as both an intimate gesture and a troubling breach of trust” (Stroot, ibid). However, in my view his earlier point deserves heavier emphasis: the information is publicly available but not publicly exhibited. It could be, and should be – it creates a curious and personalised atmosphere. Sure privacy has to be respected and in my work I took this into account by using only very low resolution images which could be identified as one's own mostly through their composition of shapes and colour. Besides, whether a social media user feels that their publicly available imagery is compromised and in this setting coming across as too intimate and exploited – how could one ever be sure that it is not currently exhibited in many other places and applications?

3.4 Interface as a medium

Still from *COMP USA Live: The West* (Fingerhut et al., 2017).

COMP USA (Fingerhut et al., 2017) is a ”live television program that takes place entirely within a desktop computer”. Directed by digital artist Mark Fingerhut, the series foregrounds the computer interface in a vital manner, establishing an ever-familiar view as the 'place' of action for this digital theatre. The aesthetics are highly pre-productional, surfacing the

preliminary aspects of digitally produced art by explicit display of GUI, configurations, trial and error of settings and live web browsing to name a few examples.
In my view COMP USA proposes a novel productional approach: everything necessary for production of live-performed digital art exists within the default user interface and common applications (such as a media file player), rather than using ”professional” tools for producing such content. What constitutes a ”professional tool” in digital art or digital production anyway? Perhaps most importantly it is *industry standards* – and as examined in Chapter Five, in order to bend these notions and propose alternative methods for digital creativity, artists nowadays tend to write their own software and methods rather than following standards. Such initiatives from my perspective are very welcome to the sphere of digital creativity in ”professional” terms (as in the tools which designers or “digital creatives” generally use). COMP USA approaches the digital system exactly in this manner. Similarly experimental use is seen in the examples of Ulman and Dullaart: the ”standards” of digital media (such as social media platforms) are challenged and interesting methods for workarounds and hacks of their cybernetics are applied. All of these examples are intrusive towards the intended use of interfaces – both graphically or culturally – and show progressive efforts towards digital media through artistic work.

I would argue that when examining the aesthetic cybernetics of computing per se, it is vital to include the interface and the tools used in everyday human-computer interaction in the discussion, for it emphasises the structures of these systems by directly exposing them. The process and production of COMP USA demonstrates this exquisitely and should to be regarded as a prime example of cybernetic art. While it thematically does not directly address human-computer interaction as my work does, in terms of its production values and methods it proposes interesting notions considering digital art and computers as creative tools – or even as a stage.

4. Research question

4.1 Cybernetics

According to Norbert Wiener's (1948) well-known definition, cybernetics is the ”study of control and communication in the animal and the machine”. It is a broadly applicable theory which I, in my work, approach from the perspective of computing and in particular human-computer interaction. I understand a cybernetic structure as a feedback loop, an interactive system that has parts that can be controlled.

Computer systems and human-computer interaction is a modern, commonplace example of a cybernetic system: a user interacts with the computer, changing how the system works, and which calculations it performs. The computer, on the other hand, changes the perception of the user about the subjects that the interaction concerns. A very simplified example of this would be an online search about a celebrity: the user commands the computer specifically to find news about a given person (instead of using the computer to generate 3D graphics for example). The computer renders a video of the celebrity onto the display, causing the user to receive information about the celebrity. Here the user becomes more informed about recent happenings considering the person they searched for, altering their understanding of them. This is a banal act, but holds many interesting communicational exchanges and mediatory interactions, which I have chosen to discuss in my performance *The Use of a Personal Computer.*

4.2 Cybernetic criticism

In my practice I have found that in order to make the invisible noticeable, the banal or usual view to the issue has to be manipulated; in other words, remarks should be made using meta-reflective methods of cybernetic criticism in order to highlight the subjects. I will now explain where the inspiration for this finding came from.

The main research question which influenced the whole progression of the *The Use of a Personal* Computer came from Søren Pold's writing, as he examines ”cybernetic mentality and its critics”. In his essay *Interface Perception,* he discusses UBERMORGEN.COM (an artist duo lizvlx and Hans Bernhard) and particularly one of their projects, *Psych|OS* (2001–2010). In *Psych|OS* the cybernetic system consists of feedback between a body and synthetic drugs as the work regards the substance abuse of one of the authors (“Psych|OS Cycle -

UBERMORGEN.COM," n.d.). From this work, Pold (2011, p. 107) draws a conclusion:

> Cybernetic criticism must be cybernetic in its form in order to enter into the system, but also an outspoken meta-reflection of the machine in order to avoid merely confirming the order of the system and becoming a speechless part of it, as just another wheel in the machine, or a banner ad on the front page of the cybernetic spectacle

I wanted to explore whether this suggestion is valid when applied to the cybernetics of computing; is criticism of computer use best done in form of computer use – or critique of digital media by use of digital media as material for it? I aimed to experiment whether doing so would offer means to "enter into the system" as Pold above suggests. I was also interested in what would be the potential methods for meta-reflecting the machine – what is even the machine in this complex system?

5. Methods

I chose the practice of visual live performance as means for criticism of the contemporary human-computer interaction. In this chapter I will analyse the structures and methods by which I have decided to illustrate my subjects of criticism, i.e. various aspects of digital cultures and condition of virtuality. Backed up by writing primarily by Lev Manovich and Søren Pold, this chapter will present that in my work the most important method of addressing issues as well as affordances of media culture are *interfaces*. They allow the user to include themselves within the communicative feedback loop, interchange of which influences both the system itself and its user as well as their environment:

> The cybernetic interaction and feedback connects the representational and the functional, and even though these connections are not seamless, *the chimerical character of the interface pervades both the machine and the medium and influences the culture around it* (Pold, 2011, pp. 96–97)

5.1 Interface as artistic material

I would like to first make a distinction between the two types of interfaces discussed in this chapter: *cultural interface* and *graphical user interface (GUI)*. Here, cultural interface

considers the cultural data e.g. how a photograph (or an online profile) can represent a person, whereas a GUI considers the more technical approach to an interface e.g. the visual design of a navigational tool. I regard that a GUI offers the access to cultural data: the Windows operating system (GUI) I am using at the moment offers an access to my work and this thesis text file (cultural interface) and my online profiles (cultural interface). Pold (2011, p. 97) explains the same principle accordingly: ”on one hand, the interface is a functional tool with which one can perform various tasks and automations. On the other hand, it is a representational medium used for cultural production and experience.”

> As distribution of all forms of culture becomes computer-based, we are increasingly “interfacing” to predominantly cultural data: texts, photographs, films, music, virtual environments. In short, we are no longer interfacing to a computer but to culture encoded in digital form. (Manovich, 2001, pp. 69–70)

The fact that virtual representations seem to nowadays offer adequate means for interacting with (”real”) culture is in my view because of the representational media is fluent and fluid; well-designed user interfaces are able to hide the translation and encoding of culture as data. I find that through cybernetic criticism of the graphical user interface I can address these issues in cultural interfaces and appoint notions of virtuality and representation. Using the often transparent operating system interface as a platform for expression, *The Use of a Personal Computer* aims to deepen the understanding of graphical representations as strictly simulative. The performance aims to discuss the human-computer-culture interaction and highlight the process of mediation through my personal expression as a live performance, since "poetic meanings may deepen the perception of a daisy or a ruin of a building", states Berleant (1992, p. 29) in context of discussing environmental experiences. Similarly, in my performance, I aim to create new conceptions of familiar virtual environments and through breaking the usual interface and de-contextualising online artefacts, demonstrating certain aspects of what Manovich nominates as ”cultural interfaces” that would otherwise be transparent to a common computer user.

5.2 GUI as material

The graphical user interface (GUI) is one of the most important elements in *The Use of a Personal Computer.* Whilst a graphical user interface is ”mapping code onto a graphical

display” (Friedberg, 2006, p. 230) it hides the underlying technical structures in order to ”help us to forget the interface and concentrate on the text or data inside” (Bolter and Gromala 2005:42 in Friedberg, ibid.). This is the process and aims of a well-executed GUI (Jansen, 1998), hopefully familiar to all software developers and user interface designers. My artistic aims, however, go one step backwards. In the performance, I am precisely trying to make the audience pay attention to GUI in aims of questioning the cultural interfaces accessible through them.

> Even when considering effectiveness, aesthetics matter, but computers and interfaces are not limited to workspaces and use situations where functionalism and effectiveness are the key. With digital art, the Internet and computer games, cultural interfaces are flourishing – interfaces that are not transparent or functional but evident, quixotic, and highly visible. (Bertelsen & Pold, 2004, p. 24)

In *The Use of a Personal Computer*, I am not trying to hide any computer interfaces, extracting only the data and contents of the code, visual art, or of the web for that matter and bringing them to a polished visual performance. Rather the opposite: I am in a very visible manner (and in technical terms literally) mapping the GUI onto my graphical performance. The contextual references that the graphical interfaces of any widely adopted applications such as social media sites carry, according to my research, indeed work as great material for artistic analysis and exhibition of the cybernetics considering modern technology – the processes that lead to production and experiencing of cultural interfaces.

Still from *The Use of a Personal Computer 2017 pt. 2*. (Niemi, 2017a)

To concretise: the Facebook user interface can be (and in my performance, was strongly) presumed as a familiar artefact to most of the audience. Perhaps they use it relatively often and are familiar with its addictive nature – and if not personally, possibly through someone they know or through news articles. In my work, I centered the field of view in the middle of a three-dimensional cube with a screenshot of Facebook as its ”wallpaper”. By doing so I embodied a notion of being trapped within this interface – within Facebook. In this case, the fact that the Facebook interface was not presented solely as a direct screen output allowed me to manipulate and multiply it within the artwork. By visually amplifying the usual view of the GUI of Facebook into a ”room” or a ”space” in which the viewer/actor/3D perspective is within, my aims were to cause an encounter of an intimidating environment of excessive virtuality. My artistic vision was ultimately to present the process of using Facebook, or even its ontology, with a tone that reflects my ideas of it – distressed.

Relevant to note here is that much of ”post-internet art” seem to concern social media networks in particular. Although I work on digital art, in my opinion the most interesting

artworks are not done within the ”genre” of computer art, nor technological art for that matter. Interestingly, however, utilisation of interface aesthetics is still present in these works. Presented here is *Julia's Twitter*, work by John Yuyi.

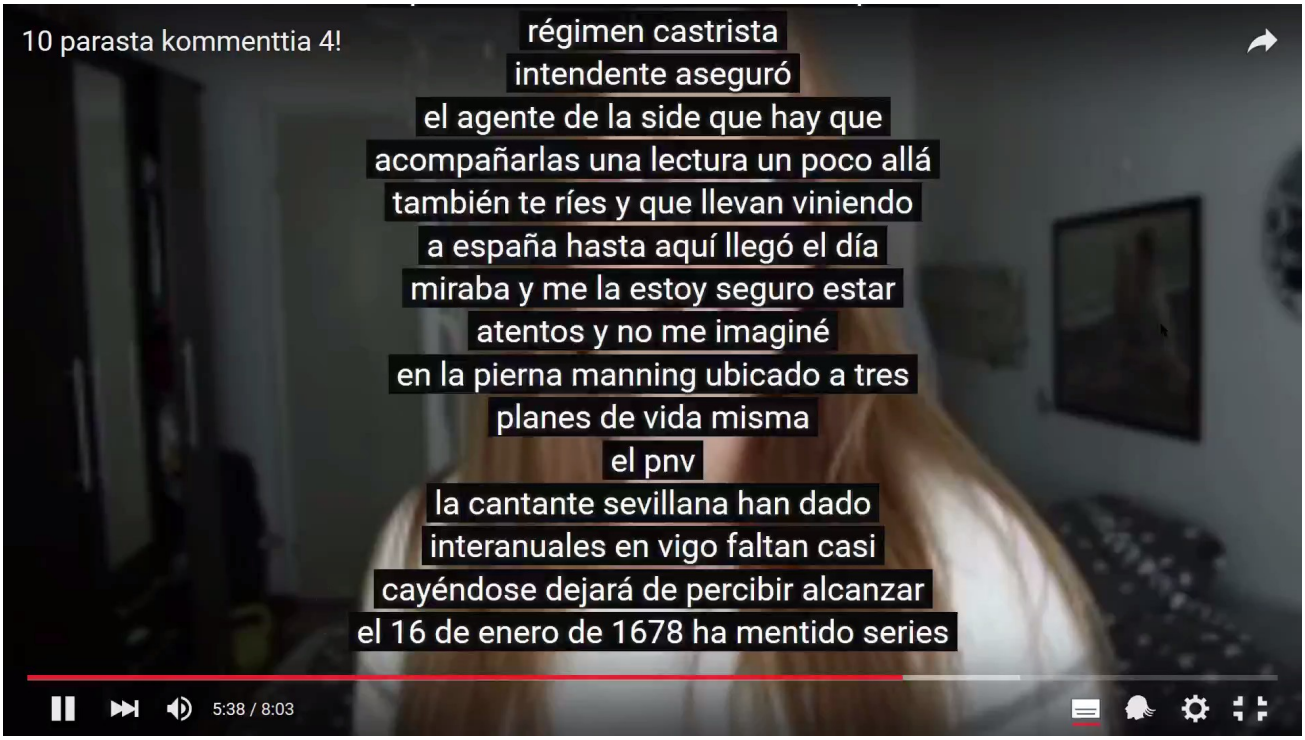
Julia's Twitter (Yuyi, 2016)

5.3 From GUI to cultural interface

Along with the positive affordance of being recognised as familiar, utilising the visuals of a graphical user interface allows for means of evaluating ”cultural interfaces”. Due to its representational forms, I consider software as a native language for conversation about digital cultures. To exemplify, even a visualisation of an online interaction, (e.g. utilising the visual design of a messaging platform) enables an artist to discuss person-to-person relationships (as an exchange between two cultural interfaces). The potential for online messaging is of course enabled by software and withholds complex connotations of a mediated human existence.

Manovich (2013, p. 9) argues that all new features of contemporary existence (such as network society and social media) that come with digital culture are enabled by software, hence the importance of addressing it:

> If we don't address software itself, we are in danger of always dealing only with its effects rather than the causes: the output that appears on a computer screen rather than the programs and social cultures that produce these outputs. (Manovich, 2013, p. 9)



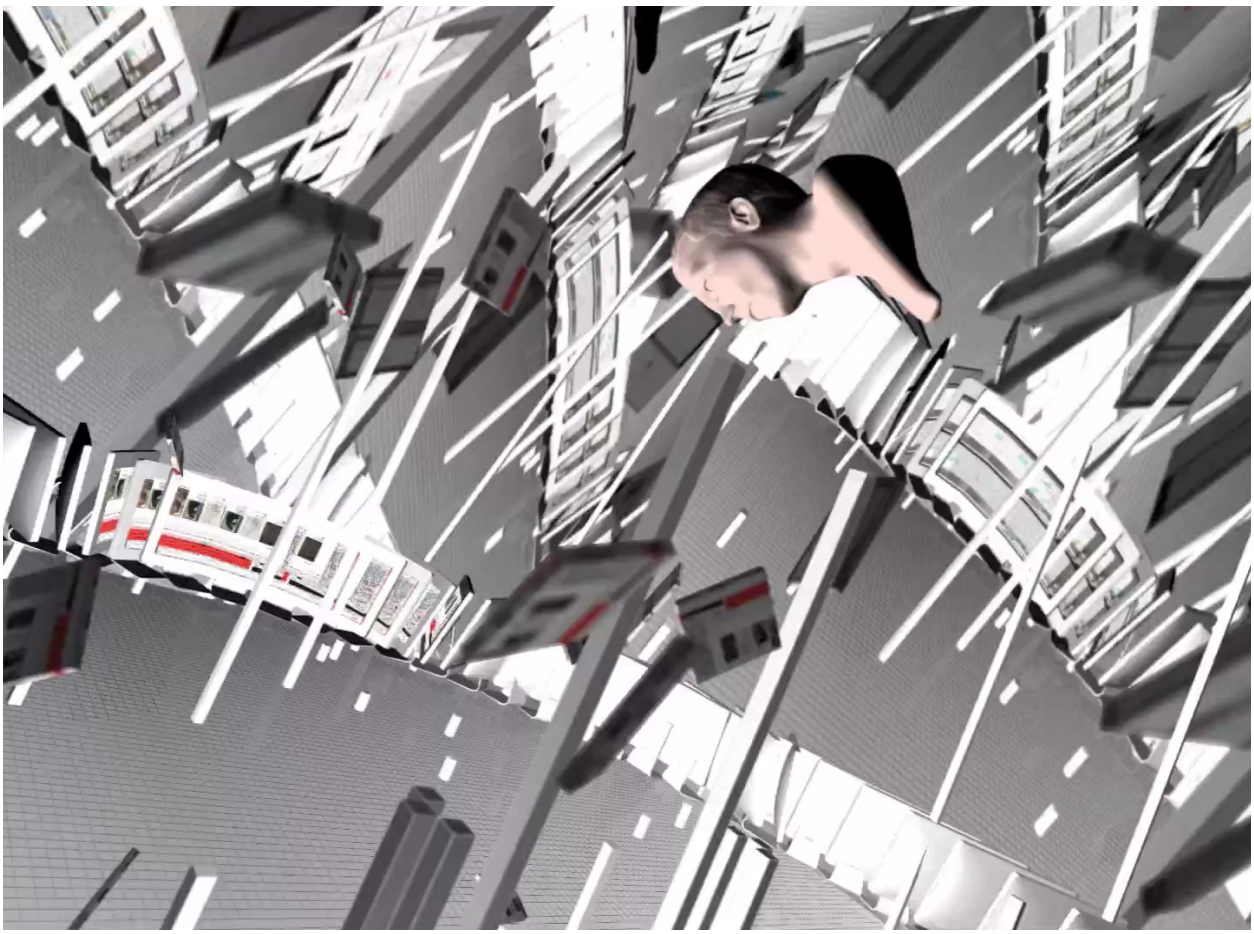
A still from *The Use of a Personal Computer 2016, pt. 1*. (Niemi, 2016)

The above illustration shows my attempt of presenting the process of video blogging as peculiar through means of cybernetic criticism. This is an example of harassing the intended functionality of the GUI to accentuate it; method by which the transparent becomes visible. Through this presentation, the audience might gain deeper understanding about these cybernetics since a *new representation* of the subject is created. This is examined by Manovich (2013, p. 196) as aspirations of a ”media hybrid” – designs which aim to ”reconfigure [existing media formats] in order to create new representations of human collective and individual experiences”. He particularly highlights that ”it may be necessary to systematically question the conventions of different media types that make up a hybrid, changing their structure in the process.” (Manovich, 2013, p. 186).

By disturbing the usual delivery of content in its original format by an unexpected use of software (in this case simply the computer generated captions) I aimed to emphasise the structures of video blogging and the software enabling it. The content of the generated captions is irrelevant, but important is the process of doing so: the interaction of extracting further data from within the affordances of Youtube. The conventions of this media type are challenged, allowing for new conceptions of it. By producing irrelevant and nonsensical media artefacts by the in-built functions of the software, I aimed to demonstrate that the software in fact regards the youtuber, and the complete video blogging process as information, as data, or in terms of Les Levine, software:

> ”[Levine] argued that proliferation of mass media was changing knowledge into a second-hand mental experience of simulations and representations – i.e. software” (Shanken, 2002, p. 434)

The video and the youtuber in fact are already processed as information, as software (within the digital platform), but an understanding of these technicalities is not directly apparent through the GUI (the web platform). This is of course, and fortunately, due to the fact that the graphical user interface prefers usability and access to the content, to the cultural interface of the youtuber rather than announcing itself as a representational media. The technicalities of simulation are irrelevant considering the general use of digital media, and also hardly of interest to anyone that desires to view videos. Nevertheless, becoming, being and interacting with information formats (software) is a true process in use of technology with aspects that augment and alternate reality.



Still from *The Use of a Personal Computer 2017 pt. 2. (Niemi, 2017a)*

To give another example of my methods on criticising particular cybernetics of a cultural interface, specifically blogging and the apparent phenomenon of social media addiction: during one performance I searched online for *social media addiction*. I came across a blog post about it. I inputted this text into a text-to-speech application, which made the writing come to ”life” from its virtual body of a ”social media object” and also liberated it from its initial format of text. The result, however, was a highly mechanical sounding voice. Here, in my view, lies successfully ”an outspoken meta-reflection of the machine” (Pold, 2011, p. 107) (in which ”the machine” is the whole tragedy of making a personal reflection on social media about social media addiction).

The audience followed my actions of searching online for the article, detaching it from its context and creating this irrational entity; “painting a figure", or creating a meta-entity of digitality out of digital material. The dilemmatic blog text (rather than the blogger) is in my expression quite graphically meta-mediated, formulated as a digital entity. Through this ”resurrection”, the blogging becomes ”real” rather than a social media post, liberating the addicted being from its cybernetic prison, all the while the text controversially manifests an

obsession over digital environments and is indeed spoken out by a digital text-to-speech converter.

> With their imagination, artists can propose worlds with a ‘life of their own’ in which unpredictability, complexity, chaotic reordering of interconnected digital logical circuits cause unpredictable and undetermined situations to emerge and thus enhance the aesthetic dimension of a technological world. (Domingues, 2004, p. 161)

Domingues presents that for creation of such constructions, unorthodox methods and approaches are necessary. In my view, this goes hand in hand with the meta-reflective processes and cybernetic criticism which Pold proposes. As comparison, the original blog text as a self-contradicting manifestation and criticism of social media is not effective in originating critical thought. It rather confirms the order of the system, breeding *likes, shares,* and further approval of the structures that the author aims to comment on. Such expression is not meta-critical; it lacks the necessary self-criticism and self-reflection towards the subject, failing to consider in depth the aspects that cause the author's personal issues towards social media. In this regard experimental initiatives, indeed cybernetic in nature, are needed for an effective critique of media culture and its cybernetics.

6. Design and implementation

> I think the main thing that I'm interested in is trying to find a way of making the computer into a personal mode of expression. … In a way, the computer makes possible much more than what most people think, and my art has just been about trying to find a personal way of using the computer, and so I end up writing software to do that. (Levin, 2004)

The performance series began from a desire to experiment with the possibilities of a default Windows operating system as a VJ set. This experimentation worked as a strong and inspiring starting point, by which I gained confidence in the thematic: I acknowledge that there would be an infinite amount of material to utilise and subjects to present within computer systems. I have concluded the first performance as follows:

> Taking something ”as commonplace” as a computer interface and displaying it as a visual projection I never aimed to get justified as VJing of the traditional type but more as an experimental act, digital theatre, virtual acting. Wanting to push the

> Windows interface to its limits with several ideas in mind I thought I would be able to deliver a live performance that the audience might find attractive in such a context. Not a club for dancing until early morning but rather a relaxed bar atmosphere, I thought the setting was ideal. (Niemi, 2016)

Quickly, however, I developed a sense that the interface in itself does not suffice for my aims of expression – I had to simulate it in order to ”bend” a perception of it. I decided to develop a custom program which allowed me to place the interface aesthetics on various surfaces and manipulate its visual context in many ways.

6.1 Creative process

During the process of developing the application that I used in the performance, my ultimate goal was to make the most effective representation of media representations that I could – in other words simulating the *act* of technological simulation as evidently as possible by methods of digital art. The developments of my application became relatively high-tech as I aimed for more involving techniques (e.g. 3D scanning) in order to achieve a ”higher level of representation”. Through these developments my intention was to find out whether the argument proposed by Pold (2011, p. 107) in my research question (that ”cybernetic criticism has to be cybernetic in its form”) was true: whether technologically more advanced work would lead to, simply, *better cybernetic criticism*? Since a more complex technical execution involves more complex systems of feedback (cybernetics), surely their use would be able to deliver a wider range of notations considering simulation.

The efforts of delving into code and software design in order to produce ”a desired level of simulation” was an interesting process and it was easy to come up with very ambitious goals. The manual coding work added a relevant aspect to the performance – creating software in order to represent software – in itself very self-referential. I have examined this on Instagram as follows:

> … working raw with C++, I am able to consider cybernetics in a more sophisticated manner throughout the process. … through coding it all by hand I aim to explore the details of becoming simulated, and manual labour VS photoshop/drag and drop arts proves quite fruitful to me in this regard. (Niemi, 2017c)

Perhaps this was most essential for my personal attitude towards software in general, fueling my thinking from a design and application development perspective. Whilst I have acknowledged that all digital work and interaction with virtual environments happens ”mind-first”, this self-referential and ”embodying” practice even better exemplified the cybernetic interaction with software. Pold (2011, p. 106) argues that ”it is difficult to criticise the cybernetic system from a distanced standpoint and with clear rational paroles” – a way of breaking into the system is necessary. In my project doing so, as elaborated above, offered me an insight into the mechanics of software and at least made me consider what it is that constructs software. Dreher (2016) presents that this has been an intention for computer art pioneers since the shift from first-order cybernetics to the second (to that of *observation of the observing system;* in my understanding, simply put, when interaction was emphasised rather than the tools for it):

> Within these changes of the cybernetic research the pioneers of computer art localised themselves with their works and texts. Either they emphasised the possibilities to integrate observers of cybernetic sculptures into circuits, or they oriented their production of computer graphics to cognitive aspects of the visual perception. (Dreher, 2016).

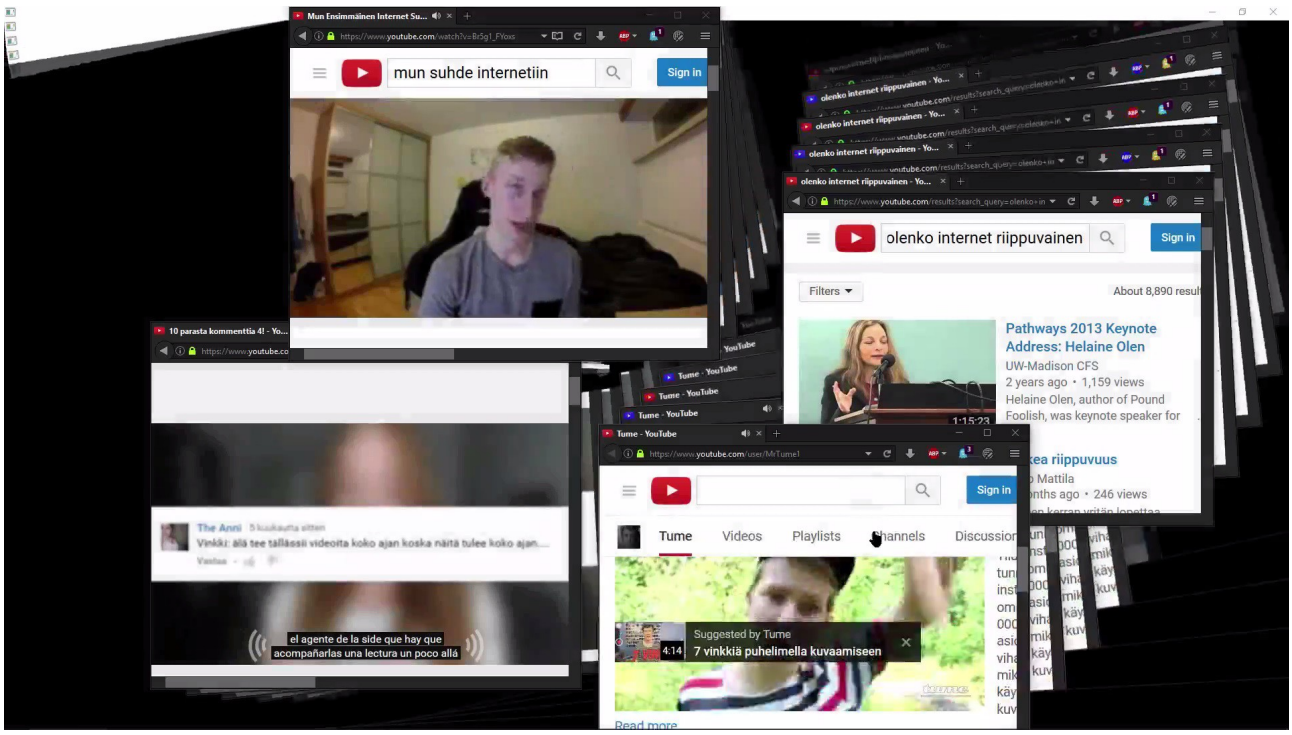
While Dreher could be seen to rather elaborate on audience-relational interactive artworks as in ”cybernetic sculptures” (which welcome the observer to interact and touch), the cybernetic approach is appropriate from my point of view too – in particular when also theories of Pold are considered. In conclusion, it could be argued that *creators of cybernetic criticism should localise themselves into circuits*, in order to have an insightful (as for techniques) and an insider (as for intellectual) formulation of the subjects that they seek to criticise.

6.2 Stage design

The visuals were always projected using only one projector, often on an otherwise empty stage. Me and the sound artist would perform from a position where we could see the visual, often behind the audience and occasionally next to the screen on the right side of the stage. Never facing the audience and with the image projected at us – priority was in having the image as large and focal as possible.

Photograph from *The Use of a Personal Computer 2017 pt. 5* (Marimur, 2017).

The venues where the show was performed varied from cultural arenas to pubs and venues of urban culture and underground parties. Illustrated above is culture centre Korjaamo which was the last but also the most ideal venue and an event – *Stage Festival* – a festival with focus on ”future of theatre” with film screenings, talks, live performances and concerts. The events where I performed were often music-oriented with some audiovisual acts. Excluding my solo exhibition *Koodeja* at Muukalainen in November 2016, the performance was always one amongst other performers and was often introduced as ”audiovisual live performance”. Could be concluded that the most ideal venues were those with a large screen as this emphasised, immersed and perhaps even converted the notion of a computer screen in an interesting way. As for the events with other visual content, I would consider having succeeded in making a distinction from other audiovisual performances. My work indeed is stylistically different from the usual VJing – and it is not even ”video jockeying” per se – this in my view proved absolutely as a strength and also called forth new conceptions of what audiovisual culture and visual performances today are. The thematic and the execution were very suitable to the atmospheres of the events, often generating a light mood through means of humour with a fine balance of sincerity where appropriate. The significance of live situation is explored further below.

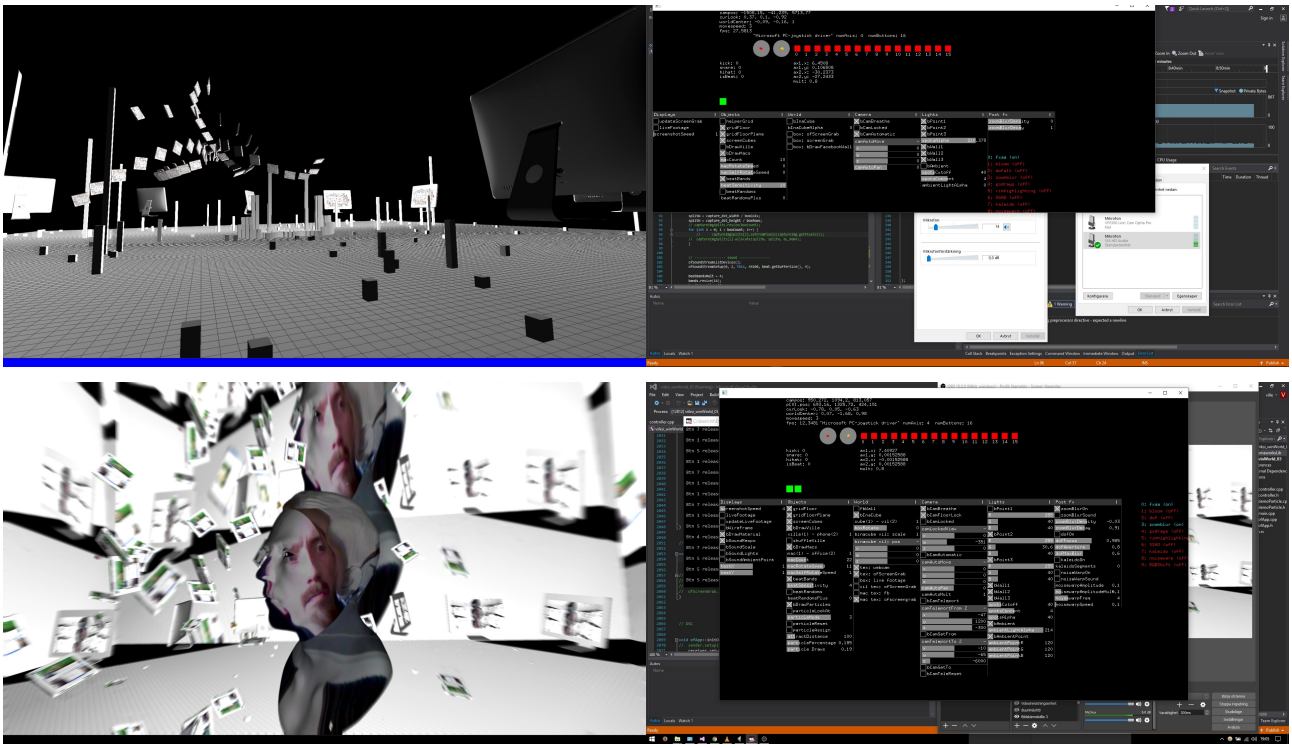


Still from *The Use of a Personal Computer 2016, pt.1* (Niemi, 2016)

6.3 Application design

Initially the visuals were two-dimensional, a direct screen mirroring of my computer. Everything that happened on the screen of my laptop was shown to the audience – no hidden GUI or an opportunity to plan materials on the other screen. Since the beginning there was an openFrameworks-based application which allowed me to manipulate the way the operating system appeared – not its actual appearance but rather a staged, solely visual duplication of windows. This is exemplified in the illustration below.
In this illustration, the custom-built application is behind the web browser (YouTube) windows. The application at this stage only handled a continuous screen capture of the whole operating system, with a slight rotation of the captured image. The application of course captured itself as well, resulting in a visual feedback loop which proved visually satisfying.

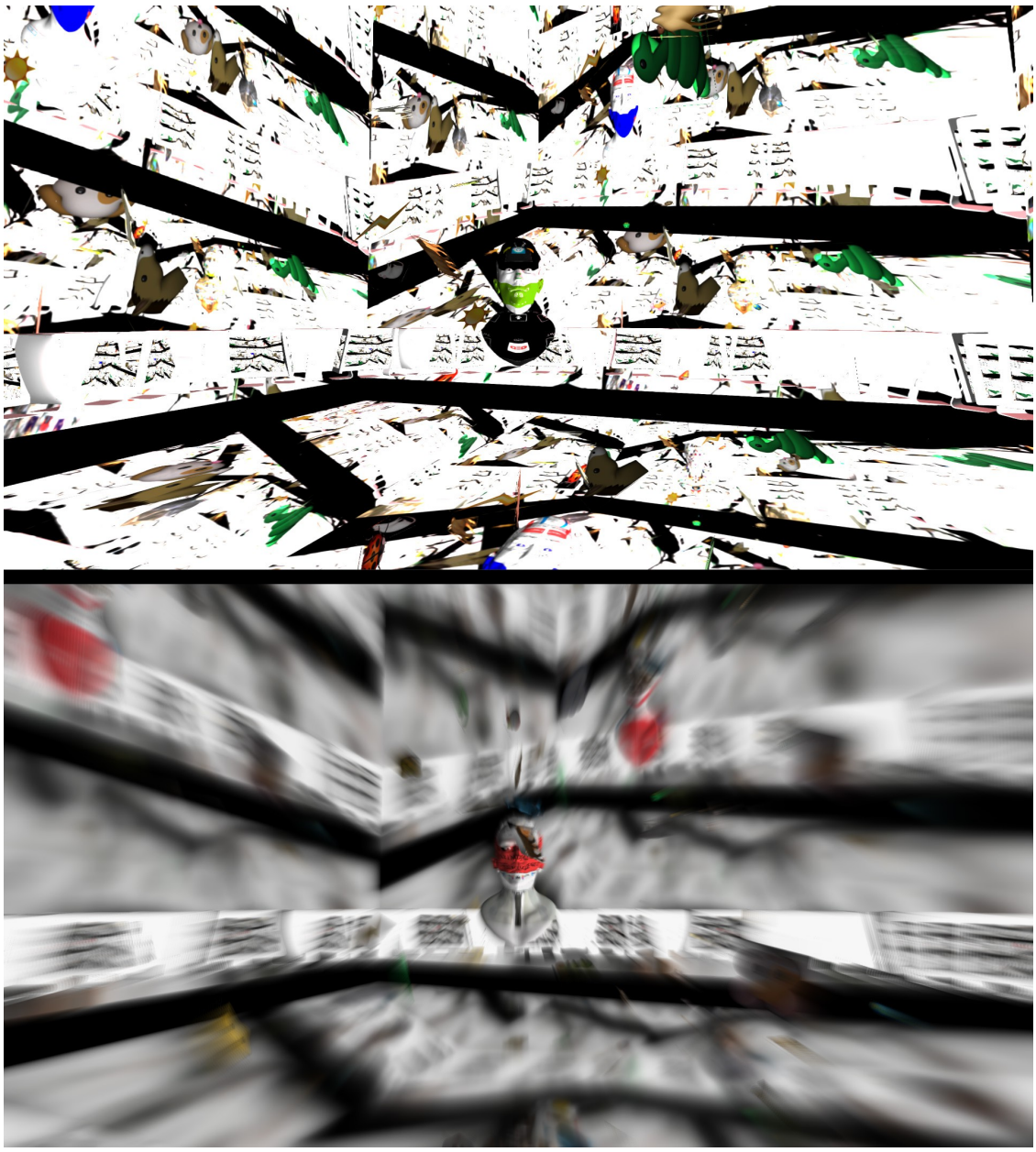
Later, when I had decided to introduce a navigable 3D environment as the basis of the performance, the laptop screen had a control panel for the elements, visual effects and texture/material inputs. The second display (the projector) had only the visual output of the application, resembling a more traditional VJ setup.



Screenshots of development of *The Use of a Personal Computer* with GUI (Niemi, 2017b).

Navigation in the 3D space was done with a gaming controller. This was due to my interests to ”gamify” the act of performing – it was simply fun but also allowed for better control over the 3D view, similar to any game with a first person view.

It was also important for me to have the performance to react to the soundtrack, in other words creating audio-reactive visuals. This was in order to better synchronise the experience of seeing and hearing the performance. My aim however was never to have completely generative visuals so I mostly applied this to the post-processing (or the visual effects), especially towards the ”zoom blur” effect illustrated below. A loud bass would control the effect in a similar way to how speaker produces sound – vibration. It was simple to put this visual effect into practice with an appropriate openFrameworks plugin (or add-on) and it created an important visual reference to the soundtrack.



Stills from *The Use of a Personal Computer 2017.* (Niemi, 2017a)
Above a view of the 3D navigable space without the primary audio reactive effect, below with it being activated (audio playing).

6.4 Visual design and aesthetics

The main reason for progressing from 2D to 3D – which happened very early on considering the whole series – was to create a more ”convincing” audiovisual performance and gaining a credible profile as a 3D visual artist, grasping the techniques for producing virtual reality art. I also wanted to practice openFrameworks, ”creative coding” and coding graphics in particular.

As a medium, 3D also allowed for wider means of visual representation, mainly through a sense of *space* which 2D lacks. I worked as an architect for a simulation of my views of human-computer interaction and issues related to it. I created an interface, a platform to which I could add elements about the subjects I wanted to express. To me, the 3D environment which I used in many of the performances ultimately signifies *cyberspace*. I have described the space as follows: ”displaying screen captures of moments spent with(in) computer systems, the time has stopped here, as if the cybernetic loop was interrupted” (Niemi, 2017a). It is in line with many of the visualisations of a simulated data-space in science fiction, as popularised namely by William Gibson (Rutsky, 1999, p. 15). Rutsky (1999, p. 14) discusses theorization of techno-cultural complexities and recent works of science fiction authors, stating that ”one of the most popular means of representing this relation has been to figure the human subject as immersed in a vast and inescapably complex technological space”. He also describes how I have approached this visualisation as well: ”it is constituted through technological reproduction: it is a space of surfaces, images, simulations, empty signifiers—a space, that is, of information, of data” (Rutsky, ibid. p. 15).

Rutsky (1999, p. 15) argues that what he calls ”high-tech aesthetics” contains a paradox: ”as the *form* of technology edges toward 'invisibility,' technology increasingly comes to be seen in the form of data or media”. He emphasises that in these *spaces* of representation, technology is shown as data, image or other media. Whilst to Rutsky it may be paradoxical, in my view this approach is however very logical. It must be the immediate and the most presumable medium of representation of the representations per se; after all, what is our ”computer space” other than an infinite system of graphic representations? The most evident way to present a *video as a file* is by addressing the video software itself and disregarding the original content. Similarly the most comprehensible format for illustrating a human being as a media representation is a demonstration of the interface which creates the representation. These concepts can be notated through artistic work that is strictly visual yet it requires a construction of new interpretations and novel formats.

In his lecture on ”post-digital aesthetics” Andrews (2002) refers to a concept of ”foregrounding”, a process in which:

> artefacts of production are brought forward to become new ‘content.’ In order to achieve this any other content (musical or cultural) is evacuated from the work. … The artefacts of the media substrate become new structuring elements.

According to this proposal, *The Use of a Personal Computer* can be considered as an example of ”post-digital” art, since the performance is based on the artefacts of the media substrates, i.e. interfaces for digital interaction. As this considers mostly aesthetics, here lies an accordance to my artistic decisions; the rawest and most direct view to the representative form, in my view, functions as the best possible (visual) representation of the concept of representation. Visually it makes clear connections to the interfaces and their appearance, yet the de-contextualisation of given media artefacts is able to create a new representation of it. Andrews defines this above as ”evacuation” of content in order to emphasise, or ”foreground”, the artefacts of production, while Rutsky discusses it as a focal attribute of the ”machine aesthetic”:

> The machine aesthetic’s simulation or reproduction of “technological style” enables technological form to be separated from function; it allows a technological style or aesthetic to be “freed” or “unsecured” from its previous, functional context. (Rutsky, 1999, pp. 11–12)

The visual appropriation of the ”technological styles” of interfaces is indeed only a *simulation* of their essence. In my performance, it is *visual* design intended for artistic expression. Considering the principles of ”foregrounding” certain aspects of media artefacts (for example a GUI), the ”machine aesthetic” in my work behaves similarly: in order to accentuate a given interface or an affordance of digital technology as a curiousity, it has to be formatted in a novel way, or in a novel context. Primarily one would consider this to be done stylistically rather than functionally, in other words through visualisation rather than interaction. Relevant to note here, however, is the fact that *The Use of a Personal Computer* also included functional demonstration of media artefacts, for example playing a game or browsing the web. This leads me to consider that the performance was in fact able to include both of these approaches, visual and instrumental (aesthetic and functional); whilst being visually experimental in terms of usual interface aesthetics, the performance also addressed ”freed” or ”unsecured” means to use the computer. Specifically, the performance included live interaction with the computer interface rather than being solely a visual artwork. Thus, the aesthetic entirety of the performance is not limited to the visual aspects of technology, but also its interactable nature – the act of human-computer interaction.

6.5 Liveness

Photograph from *The Use of a Personal Computer 2017 pt. 5* (Marimur, 2017).

> "The efficacy of the work relies on the experience of the process of time in space, rather than on the object, product or narrative" (Klich & Scheer, 2011)

The performance happens on a screen and thus it could have been merely streamed online, but to me physical presence was key. ”Aura is the relation of an artwork to the space where it is situated … the soul of an artwork is not situated in its body but rather the body of an artwork is situated in the aura, its soul” (Groys, 2002, p. 59, my translation). I would argue that the aura of my artwork is in the momentum where interactions are made and presented. Its body consists of the cybernetics of computer use and its human user – human-computer interaction (HCI) – but also in the extension of this as a live presentation to the audience. The *place* where the performance happens is on my computer and in my interaction with it, projected to the wall for audience to see. If the performance was solely streamed online, what Groys presents as *aura* would consist of completely different factors while the subject of analysis would also shift due to context. Although Les Levine in the 1970's exhibition catalogue of

Software argues that ”the experience of seeing something first hand is no longer of value in a software controlled society, as *anything seen through the media carries just as much energy as first hand experience*” (Burnham, 1970a, p. 61, my emphasis), I believe that my intentions require for the audience to recognise my physical presence. This emphasises the reality of interacting with computers in a banal yet effective way; in the performance, forgetting about the screen, I am merely sitting on a chair staring at my computer and *labouring* with it. Broadhurst (2002, p. 158) presents that in the intersection of the physical and virtual exists ”liminal spaces”. She argues that this threshold joining together both sides produces meaningful tensions. In *The Use of a Personal Computer* my presence as a user of my computer therefore brings relevant dependencies and an essential aspect of tension to the performance; while the performance is primarily visual (on the screen), my live presence and “performance” of *using a computer* attends what Broadhurst describes as the liminal space in human-computer interaction. While my physical practice is admittedly very simple and unimaginative, the connection between my hand moving the cursor on the screen is in all its banality expressed and intentionally exhibited. Broadhurst concludes that:

> It is within these tension filled liminal spaces of physical and virtual interface that opportunities arise for new experimental forms and practices (Broadhurst, 2002, p. 162, my emphasis)

The novel movement within media art which *The Use of a Personal Computer* in my view follows, is exactly in the liveness of the interaction with the computer interface and the utilisation of what the operating system and the Internet offer. These create intense opportunities for the live situation. Although digitalisation and simulation can be discussed in video-based artworks, what these lack is indeed the emphasis of the (digitally creative) *process* – which is the prerequisite of the final work.

The online gallery of the feature exhibition *ARS17: Hello World* of Kiasma features a 2015 series by Florian Meisenberg (Kiasma, 2017), work of whom the original commissioner Daata Editions writes the following: ”Meisenberg’s practice has moments of performative or process-based gestures which are simple, humorous and revealing of the material aspects within digital image making” (Daata Editions, n.d.).

Herein lies the strength of live computer use in contrast to a video recording: the materiality of digitality is explicit. Installation works that as such are not performative are able to present

the subjects but do not attend their causes, i.e. the human-computer interaction required for such work to exist. As such, I feel that the meta-reflective approach of *the Use of a Personal Computer* is more valid in discussion of human-computer interaction, since it exclusively includes it in the performance, than if it was a media file, a recording or a broadcasted artwork.

7. Conclusions and discussion

As presented in Chapter Three, I aimed to find out whether criticism of computer use best done in form of computer use and wanted to experiment with computer use in an artistic setting – live performance being the most intriguing due to its spontaneity and liveness, a method for me to turn the personal into participatory. The artwork yields no direct results as such, yet I trust that this thesis manages to illustrate some of my findings comprehensibly.

As pointed out, I find that the method of re-contextualising content of both technological and cultural interfaces is powerful and this advantage should be recognised. These images are undoubtedly familiar to most audiences of the digitalised world, which allows for meaning-making of high relatability through new representations in form of "media hybrids". Additionally, within digitality, visual representations are intrinsic; therefore utilisation, manipulation and *re*-representation of such aesthetics seems to be effective in terms of visual-based cybernetic art – granting access to discuss the subjects in their own language. In this respect, I have found that the creators of cybernetic criticism should indeed localise themselves into the systems both technically and thematically, in their process and in aesthetic decisions. This carries stronger potential for reflecting the inherent constituents of the system, which an artist might seek to criticise.

I feel that as for criticism of the computer interface and use of technological (social) media, the work presented good initiatives yet in some cases might have lacked in delivery. In some concerts where we performed, the work was more fitting as criticism of traditional VJ tools and a curiosity within that spectrum rather than its narrative. I feel that the events in which the performance was framed as a gig, the technical execution appeared more exciting and

superseded the theoretical thematic whereas more art-oriented, gentle environments might have allowed for better opportunities for textual interpretation due to higher grade of focus inherent to the venues.

The Use of a Personal Computer proved as a complete and consistent series to me. Its progressive nature and iterative technical development were fruitful for my personal approach towards working on digital art and particularly on live visual performances. Considering exploration of the user interface and utilisation of interface aesthetics, much more work will be done in this field since this series has helped me to establish a great foundation for future works in this respect. It has been thrilling to introduce my personal expression of computer systems through a computer-based live media performance. The visual language of the performance successfully presented approaches somewhat novel within the spectrum of audiovisual performances – especially in Helsinki and within the modern movements of VJing and creative coding of audiovisual art. Also, having performed in multiple locations and venues I have learnt some ”do's and dont's” of media art performance and gained knowledge on how I am wishing to proceed with my artistic work.

I have gained a good understanding of developing software for performance; however, looking back at where the series began from and the evolution it underwent, I have become less interested in software development per se. As argued by Manovich: ”the greatest interactive work is the interactive human-computer interface itself” (2003, p. 15) – I have come to a conclusion that although coding as means for creating new artistic tools is exciting, it is not essentially worth the effort. For the artistic language that I personally desire to use, the existing media for such aesthetic expression is already available in the ordinary operating systems and usual ”consumer software”. Particularly, within the examples of cybernetic art which I discussed in Chapter Two, the use of existing software and media platforms is even preferable – it allows for infiltrating with greater precision into the systems that the work seeks to criticise.

On the other hand, the process of creating my own software allowed for producing deep consideration on the mechanics of software that would have otherwise left ignored. The development, as examined above, allowed me to pursue the cybernetics with a more insider-view; consider the process of becoming simulated by simulating myself with my own software. However, it could be argued that due to these desires the performance turned out

somewhat tech-oriented. Yet I believe this opinion is mostly subjective influenced also by the fact that a plenty of developing work went into the creation of the project.

Generally I feel that the efforts of creating software were – although creatively rewarding – in a broader view rather unuseful towards my artistic vision. The shift from direct screen output to the three-dimensional environment transitioned the focus of the performance towards a less insightful, ”dressed to impress” visual work rather than a conceptual piece about user interfaces. In other words, similar outcomes would have been achievable with much less manual labour in coding. Even more importantly, the focus of technical execution could – and should – have went into wider-spread conceptual development, not only detailed conception of software.

On the other hand, I initially desired to practice creative coding through this project and in this respect the software development work was useful – I learnt a great deal about it. Yet artistically I have now come to despise such *effort* in this sense and have decided to focus on interacting with the computer interface directly rather than developing my own software, since it will be only used for a few performances. In this sense I consider efforts of creative coding for performance art as short-sighted and easily unuseful – which also in a more general view scares me. There surely are numerous performers who commit to their work in a great degree – even if the occasion or event will be small-scale and experienced by few. These efforts should be combined – and luckily in some respects they are.

In digital arts and creative coding, the community is often vital as is in my case too. Through open-source toolkits and online communities for developers, in order to program my presentation of the desired subjects, I have re-used the creative efforts of others. In other words, by utilising open-source code for my creative coding endeavours has eased my labour. Similarly, and following the important ethics of the open-source community, I have also shared my work publicly. In general, I am hoping to see a future for digital arts (along with any and every other field) where the open-source culture becomes a standard, making production and labour distributed rather than centralised – at worst strictly localised. Only through such communal procedures will individual and independent projects become eventually *useful* – yet has art, or culture for that matter, ever prioritised or even recognised usefulness? Maybe it is because of the fact that this very work and discussion considers software, and that it is often considered that technology ”is supposed to” make us *able* and *effective*, that I reckon the work towards *digital* artworks too should turn out as useful.

The function of art is of course a discussion of its own, but my subjective view is that artists often consider their work ”useful” whether someone in the audience is able to *gain* something from it. Whatever that something would ever be – a feeling, an idea or an inspiration. All of the feedback that I received from the work was oral and unrecorded, therefore I have felt unconfident in dedicating a chapter in this thesis for it (a shortcoming which I recognise). Yet one specific comment I would like to place here to conclude this chapter and finally the whole thesis. This in a sense validated to me that my work served a purpose outside of my personal goals, following the idea that art generates intellectual and spiritual welfare.

Especially within the contemporary condition in which technological devices have proliferated all aspects of human life, my work might have an adequate message. As a piece of cybernetic criticism, I have aimed to manifest a techno-phobic mentality through a technological artwork, sacrificing myself in order to save others from such digital devastation. Extracted from a short discussion with a stranger in the audience of the very last performance, they told me: ”tomorrow morning, I will have a conversation with my children.” I asked them what they would discuss. ”That. All of that. What you just showed. All these Facebook and computers and that.”

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Appendix

Video documentation *The Use of a Personal Computer* available at:

The Use of a Personal Computer 2016 pt. 1:
http://villeniemi.com/redir/useofpc2016

The Use of a Personal Computer 2017 pt. 2:
http://villeniemi.com/redir/useofpc2017

The source code for the software developed for the performance is available at:
https://github.com/villeniemi